Psyc 109
Research Methods

Day 18: Tuesday, March 27

Data Assignment 2: how'd it go

A. AWESOME 😊 😊
B. Pretty darn well 😊
C. Okay 😊
D. Not so well :\\nE. The horror, the horror of it all 😞 😞
Plan for the week

- **Data Assignment 2:** check-in, at end
- **Inferential statistics:** just a taste
- **Your next search mission:** methods & procedures
- **THURSDAY:** Continue, then write the exam (come with questions in mind!)

Next couple of weeks

- **Next Tuesday: Exam 2**
- **Next Thursday: Final preparations for Methodology assignment**

*Research Idea: Draft Introduction (25, 9-10 pages)*

<table>
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<tr>
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<th>Mar 22</th>
<th>Mar 26</th>
<th>Mar 27</th>
<th>Mar 29</th>
<th>Apr 2</th>
<th>Apr 3</th>
<th>Apr 5</th>
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| Research Idea: Draft Introduction (25, 9-10 pages) |
| Data Set 2 (15 points; 5-8 pages); Research Article 7 (15) |
| Quasi-experimental designs |
| Non-experimental research (not on exam), pre-exam review |
| Last day to withdraw |
| NO online writing assignments this week |
| Exam 2: Day 8 – Day 19 (not Day 20) |
| Observational research, writing up methods |
| Online writing assignments, Set 6, due by 11:55 pm; Research Idea: Draft Methods (25 points; 4-10 pages) |
| Survey research |
| Qualitative research; writing up results; Data Set 4 |
Descriptive statistics (Ch 12)

- Distribution at each level of the variable
- Frequency Tables
  - 12.1, raw
  - 12.2, grouped

<table>
<thead>
<tr>
<th>Self-esteem</th>
<th>Frequency</th>
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<td>24</td>
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<tr>
<td>23</td>
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<td>22</td>
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<td>16</td>
<td>2</td>
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<td>15</td>
<td>1</td>
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<table>
<thead>
<tr>
<th>Reaction time (ms)</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>241–260</td>
<td>1</td>
</tr>
<tr>
<td>221–240</td>
<td>2</td>
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<tr>
<td>201–220</td>
<td>2</td>
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<td>181–200</td>
<td>9</td>
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<tr>
<td>161–180</td>
<td>4</td>
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<tr>
<td>141–160</td>
<td>2</td>
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Graphics: Histogram (Fig. 12.1)
Central Tendency: clusters where?

- **Mean** (or M): average
- **Median**: middle value when rank-ordered
- **Mode**: most frequent or common

Mean, Median, & Mode

![Graph showing comparisons between mean, median, and mode]

- Mean > Median > Mode
- Mean < Median < Mode
Skewed, normal or symmetrical (Fig 12.3)

- Symmetrical
- Negatively Skewed
- Positively Skewed

Variability: low, high
Standard Deviation: average distance between scores and the mean

\[ SD = \sqrt{\frac{\sum (X - M)^2}{N-1}} \]

If you had to guess...

Symmetric about mean

About 68% within 1 s.d. of mean

About 99% within 3 s.d. of mean

About 95% within 2 s.d. of mean
Sample, population (Ch. 13)

- **Population**: parameters
- **Sample**: statistics
- **Inference**: "educated guess" about the population based on what’s observed in a sample
- **Sampling distribution**: representative?

Seasonal Depression

Your personal favorite?

A. Eating (a lot)
B. Bad mood
C. Sleeping
D. Sloth
E. Love ‘em all!
Prescription Antidepressant Drugs

Light Therapy
Decision Support

What really happened

<table>
<thead>
<tr>
<th>Decision</th>
<th>Chance (null)</th>
<th>&quot;Effect&quot; (alternative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retain null</td>
<td>Correct</td>
<td>WRONG (something happened, but you missed it)</td>
</tr>
<tr>
<td>Reject null</td>
<td>WRONG (nothing happened, and you mislabeled it)</td>
<td>Correct</td>
</tr>
</tbody>
</table>

- Eligible subjects screened and entered in baseline week (N=117)
- Withdrew consent (N=16)
  - Taking ineligible medications (N=2)
  - Spontaneously improved (N=3)
- Subjects randomly assigned to a treatment condition (intent-to-treat group [N=96]):
  - Received light treatment plus placebo pill (N=48)
    - Dropped out (N=8):
      - Moved away (N=1)
      - Lost to follow-up (N=1)
      - Withdrew consent (N=3)
      - Lack of efficacy (N=2)
      - Adverse events (N=1)
    - Completed study (N=40)
  - Received placebo light plus fluoxetine (N=48)
    - Dropped out (N=7):
      - Moved away (N=2)
      - Lost to follow-up (N=3)
      - Adverse events (N=2)
    - Completed study (N=41)
Double-dummy Technique

Real Drug → Control → Real Light
Fake Drug → Control → Fake Light

Results

![Graph showing mean change in score on 24-item Hamilton Depression Rating Scale over weeks of treatment for Fluoxetine (N=48) and Light treatment (N=48).]
Different populations
### Decision Support

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### Methodology
### Prior research

- How are constructs operationally defined as variables?
- How are variables measured?
- What procedures are used—and why are they considered reliable & valid?
- What **(if anything)** will you need to do differently for your proposed study?
Operational definition

THE HAMILTON RATING SCALE FOR DEPRESSION

(to be administered by a health care professional)

<table>
<thead>
<tr>
<th>Patient’s Name</th>
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<tbody>
<tr>
<td>Date of Assessment</td>
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</table>

To rate the severity of depression in patients who are already diagnosed as depressed, administer this questionnaire. The higher the score, the more severe the depression.

For each item, write the correct number on the line next to the item. (Only one response per item)

1. DEPRESSED MOOD (Sadness, hopeless, helpless, worthless)

   0 = Absent
   1 = These feeling states indicated only on questioning
   2 = These feeling states spontaneously reported verbally
   3 = Communicates feeling states non-verbally—i.e., through facial expression, posture, voice, and tendency to weep
   4 = Patient reports VIRTUALLY ONLY these feeling states in his spontaneous verbal and non-verbal communication

2. FEELINGS OF GUILT

   0 = Absent
   1 = Self-reproach, feels he has let people down
   2 = Ideas of guilt or rumination over past errors or sinful deeds
   3 = Present illness is a punishment. Delusions of guilt
   4 = Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations

Sampling and inference

Population of possible research participants
Patient Progress

Plain-language: hypothesis

Basic understanding: participants & method

Experiment?

Survey?

Model being tested
Data Assignment 2

- How'd it go?
- What did you learn?
- Problem-solving?